Remarks

By this response, claims 99-105 and 107-109 have been amended, and new claims 130-136 have been added, to define Applicants' invention with greater particularity. These amendments add no new matter and are fully supported by the specification as filed. Claim 106 and non-elected claims 110-121 have been cancelled without prejudice in order to reduce the issues.

Accordingly, claims 99-105, 107-109 and 130-136 are currently pending. The present status of all claims in the application, and current amendments thereto, are provided in the listing of claims presented herein beginning on page 2.

The rejection of claims 99-109 under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite, is respectfully traversed. Applicants respectfully submit that all claims are clear to one of skill in the art in light of the specification, and particularly point out and distinctly claim the subject matter that Applicants regard as their invention.

However, in efforts to advance prosecution and reduce the issues, certain claims have been amended as follows. Claim 99 has been amended to recite "recombinant nucleic acid molecule encoding one or more polypeptides" with the specified functional properties. As such, it is clear that the recombinant cell comprises a recombinantly prepared and introduced nucleic acid molecule, which encodes polypeptides that convert the source compound as claimed. Claim 102 has been amended to further clarify that it is the target recombinant cell that metabolizes the target compound to one of the claimed elements. Claim 105 has been amended to reflect dependency from claim 104, providing antecedent basis for "said bacterial cell". Claim 109 has been amended to recite a *trp-lac* hybrid promoter, thus not requiring antecedent basis for the term. In addition, all claims previously dependent on claim 95 have been amended to reflect dependency from claim 99, consistent with the renumbered claims. Accordingly, Applicants

respectfully request reconsideration and withdrawal of this rejection of claims 99-109 under 35 U.S.C. § 112, second paragraph.

The rejection of claims 99-104 and 106-109 under 35 U.S.C. § 102(b), as allegedly being anticipated by U.S. Patent No. 5,032,514 to Anderson *et al.* (hereinafter referred to as "Anderson"), is respectfully traversed. Applicants' invention, as defined by claim 99 as amended, distinguishes over Anderson by requiring a recombinant cell comprising two distinct nucleic acid molecules. Specifically, a first recombinant nucleic acid molecule encodes one or more polypeptides that convert a source compound to a target compound; and a second nucleic acid molecule encodes one or more polypeptides that provide a detectable signal in the presence of the target compound, wherein this second nucleic acid molecule comprises an inducible promoter to control expression of polypeptides encoded therein. The first recombinant nucleic acid molecule provides a foreign nucleic acid molecule encoding a polypeptide that converts source to target, for example, an expression vector comprising an environmental DNA fragment. The second nucleic acid molecule may, for example, encode a polypeptide that converts the target molecule to a detectable signal. Alternatively, the second nucleic acid molecule may encode a reporter gene under the control of an inducible promoter that responds to the target molecule to provide a detectable signal.

In contrast, Anderson teaches bacterial cells into which only one simple recombinant construct in introduced - an expression vector to produce the single 2,5-DKG reductase enzyme. Anderson then evaluates metabolites and metabolic pathways that are "present in the untransformed organism into which the genetic material is transferred" in order to determine which endogenous pathways can be eliminated to undesired endogenous pathways (see Anderson, for example, at column 3, lines 49-64). Thus, Anderson's system uses native enzymes of an endogenous pathway, and does not teach the introduction of two distinct nucleic acid molecules as contemplated by the present claims.

Claims 100-105 and 107-109, and new claims 130-136, all ultimately depend from claim 99. Therefore, Anderson does not teach each and every element of any of the presently pending claims. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection of claims 99-104 and 106-109 under 35 U.S.C. § 102(b).

The rejection of claims 99, 102, 104 and 105 under 35 U.S.C. § 102(b), as allegedly being anticipated by Wood and Ingram, *App. Env. Microbiol.* **58**:2103-2110, 1992 (hereinafter referred to as "Wood"), is respectfully traversed. Applicants' invention, as defined by claim 99 as amended, distinguishes over Wood by requiring a recombinant cell comprising a recombinant nucleic acid molecule that comprises an inducible promoter to control expression of polypeptides encoded therein. In the cells of the present invention, the ability to turn on and off the conversion of target molecule provides the means to distinguish multiple pathways, for example between a pathway converting source to detectable signal via target (see, for example, pathway II of Figure 11), and source to detectable signal directly (thus by-passing target, see, for example, pathway I of Figure 11).

Wood does not teach a nucleic acid molecule of any kind containing an inducible promoter. Claims 102, 104 and 105, and new claims 130-136, all ultimately depend from claim 99. Therefore, Wood does not teach each and every element of any of the presently pending claims. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection of claims 99, 102, 104 and 105 under 35 U.S.C. § 102(b).

Conclusion

In view of the above amendments and remarks, prompt and favorable action on all claims is respectfully requested. In the event any matters remain to be resolved in view of this communication, the Examiner is encouraged to call the undersigned so that a prompt disposition of this application can be achieved.

Respectfully submitted,

Date: April 16, 2003

Teresa Spehar
Registration No. 51,281
for Richard J. Warburg
Registration No. 32,327
Telephone: (858) 847-6767
Facsimile: (858) 792-6773

FOLEY & LARDNER
Customer Number: 30542
30542
PATENT TRADEMARK OFFICE
P.O. Box 80278
San Diego, CA 92138-0278